

## 3,4-Methylenedioxymethamphetamine

(Street Names: MDMA, Ecstasy, Molly, XTC, E, X, Beans, Adams)

### **Introduction:**

3,4-Methylenedioxymethamphetamine (MDMA) is a synthetic drug possessing both stimulant and mild hallucinogenic properties. Adolescents and young adults use it to promote euphoria, feelings of closeness, empathy, sexuality, and to reduce inhibitions. It is considered a “party drug” and obtained at music festivals or nightclubs. However, its abuse has expanded to include other settings, such as a college campus.

### **Licit Uses:**

There is no accepted medical use for MDMA in the United States.

### **Chemistry:**

MDMA, a ring substituted derivative of phenethylamine, has a pharmacological profile similar to the combined effects of amphetamine and mescaline.

### **Pharmacology:**

MDMA increases motor activity, alertness, heart rate, and blood pressure. It also induces perceptual changes, including enhancement of tactile sensations. Other effects include: euphoria, increased energy, increased (sexual) sensual arousal, increased “need” to be touched (i.e., hugged) and increased need for stimulation.

Abuse of MDMA can cause psychological and physical damage. Psychological effects associated with MDMA use include confusion, anxiety, depression, and paranoia. These effects may last weeks after ingestions. High doses of MDMA can interfere with the ability to regulate body temperature, resulting in a sharp increase in body temperature (hyperthermia), leading to liver, kidney, and cardiovascular failure, and possibly death. Other effects include tremors, involuntary teeth clenching, muscle cramps, and blurred vision.

Studies suggest chronic use of MDMA can produce brain damage in humans. Brain imaging techniques have revealed a reduction in serotonin nerve terminals and transporters in former MDMA abusers. Clinical studies suggest that MDMA may increase the risk of long-term, perhaps permanent, problems with memory and learning.

### **Illicit Uses:**

MDMA is mainly ingested orally in tablets (50-150 mg). Other methods of abuse are crushing and snorting or injecting. MDMA abusers usually take MDMA by “stacking” – taking two or more tablets at once; or by “piggy-backing” – taking a series of tablets over a short period of time. One trend among young adults is “candy flipping,” the co-abuse of MDMA and LSD. The onset of action after oral ingestion usually occurs within 30 to 45 minutes and lasts four to six hours, longer durations have been reported.

### **User Population:**

Users are often adolescents and young adults. The Monitoring the Future (MTF) study revealed that past year use of ecstasy remained relatively constant for 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders in 2021 and 2022, and has shown a slight decrease from 2020. For 8<sup>th</sup> grader students, ecstasy use decreased from 0.8% in 2020 to 0.6% in 2021 and 2022. The past year prevalence of ecstasy use decreased from 1.2% in 2020 to 0.7% in 2021 and 2022 for 10<sup>th</sup> grader students and decreased from 1.8% in 2020 to 1.1% in 2021 and 1.4% in 2022 for 12<sup>th</sup> grade students. According to the 2021 National Survey on Drug Use and Health (NSDUH) Annual Report, among people aged 12 or older in the United States, approximately 21.1 million people (7.5%) have used MDMA (ecstasy) in their lifetime and 2.2 million people (0.8%) have used it in the past 12 months.

### **Illicit Distribution:**

MDMA is mainly distributed in tablet form. While ecstasy tablets may contain MDMA alone, many so-called ecstasy tablets may contain other substances (e.g., MDA, methamphetamine, ketamine, caffeine, amphetamine, cathinones [i.e., bath salts], synthetic cannabinoids, and/or opioids [i.e., fentanyl or fentanyl-related substances], either alone or in combination with MDMA. MDMA tablets are often sold with logos, creating brand names for users to seek out. MDMA is also distributed in capsules, powder, and liquid forms.

MDMA is available in every region of the country, principally in large metropolitan areas. Los Angeles, CA; Miami, FL; and New York, NY are the primary market areas for MDMA smuggled into the U.S. from Western European source countries. International traffickers use south Florida as a base of operations for the importation and distribution of MDMA.

According to DEA’s National Forensic Laboratory Information System (NFLIS) Drug database, which collects scientifically verified data on drug items and cases submitted to and analyzed by participating federal, state and local forensic laboratories in the United States, the annual number of MDMA reports totaled 7,360 in 2019, 6,236 in 2020, 4,575 in 2021, and 2,509 in 2022.

### **Control Status:**

MDMA is controlled in schedule I of the Controlled Substances Act.

Comments and additional information are welcomed by the Drug and Chemical Evaluation Section; Fax 571-362-4250, Telephone 571-362-3249, or Email [DPE@dea.gov](mailto:DPE@dea.gov).